

CLAIMS

1. An image processing apparatus characterized by comprising:
reduced image generation means for generating a reduced image
5 from an input image;

correction information acquisition means for acquiring
correction information of the input image based on the reduced image;
and

10 grayscale conversion means for converting grayscale of the
input image;

wherein the grayscale conversion means corrects contrast of
the input image using the correction information, as a processing
to be performed before and/or after the grayscale is converted.

15 2. The image processing apparatus according to claim 1,
characterized by further comprising:

smoothing means for generating a smoothed image having
luminance L_c of pixels composing the input image smoothed based on
interpolation calculation using pixels composing the reduced image,

20 wherein the grayscale conversion means generate a
contrast-corrected image based on luminance L_c of pixels composing
the image, luminance L_1 of pixels composing the smoothed image, and
a predetermined gain value g .

25 3. The image processing apparatus according to claim 1,
characterized by further comprising:

smoothing means for generating a smoothed image having
luminance L_c of pixels composing the input image smoothed based on
interpolation calculation using pixels composing the reduced image;

30 and

gain value setting means for setting a gain value g used for

correcting the contrast;

wherein the grayscale conversion means generate a contrast-corrected image based on luminance L_c of pixels composing the input image, luminance L_1 of pixels composing the smoothed image,
 5 and a predetermined gain value g ; and

the gain value setting means can be configured so as to set the gain value g based on input initial gain value g_0 , reference gain value 1, and an attenuation value $\text{attn}(\text{Th}_1, \text{Th}_2, L_c)$ calculated using a first luminance threshold value Th_1 , a second luminance
 10 threshold value Th_2 , and luminance L_c of pixels composing the input image.

4. The image processing apparatus according to claim 1, characterized by further comprising:

15 conversion means for generating a tone-converted image by converting luminance L of pixels composing the input image based on a conversion function;

smoothing means for generating a smoothed image by smoothing luminance L_c of pixels composing the tone-converted image; and

20 gain value setting means for setting a gain value g used for correcting the contrast based on an initial gain value g_0 which expresses an inverse $1/\gamma$ of a slope γ of the conversion function;

wherein the contrast correction means generate a contrast-corrected image based on luminance L_c of pixels composing the tone-converted image, luminance L_1 of pixels composing the
 25 smoothed image, and a gain value g ; and

the gain value setting means set the gain value g based on input initial gain value g_0 , reference gain value 1, and an attenuation value $\text{attn}(\text{Th}_1, \text{Th}_2, L_c)$ calculated using a first luminance threshold
 30 value Th_1 , a second luminance threshold value Th_2 , and luminance L_c of pixels composing the tone-converted image.

5. The image processing apparatus according to claim 1, characterized in that:

the reduced image generation means generate a reduced image
5 by converting the input image into the tone-converted image based on the conversion function and reducing a size of the tone-converted image;

the correction information acquisition means acquire correction information including a slope of the conversion function;
10 and

the grayscale conversion means correct contrast of the tone-converted image based on the reduced image and the slope of the conversion function.

15 6. An image processing method characterized by comprising:

a reduced image generation step for generating a reduced image from an input image;

a correction information acquisition step for acquiring a correction information of the input image based on the reduced image;
20 and

a grayscale conversion step for converting grayscale of the input image;

wherein the grayscale conversion step corrects contrast of the input image using the correction information, as a processing
25 to be performed before and/or after the grayscale is converted.